

Remarks

The Office Action dated October 6, 2003 has been received and carefully studied.

The Examiner rejects claims 1-11 under 35 U.S.C. 103(a) as being unpatentable over Ryham or Gautreaux, Jr. in view of Martin et al. The Examiner states that Ryham or Gautreaux, Jr. teaches treating stripping gases of sulfides and other volatile components from liquor vapor condensate, and that Ryham then treats the gases in a thermal destruct unit to further remove sulfide gases, or Gautreaux, Jr. teaches scrubbing the stripped gases to further remove sulfides. Martin is cited for its teaching of scrubbing gases to further remove sulfur dioxide gases using alkali in a closed loop RTO as an alternative to a thermal destruct process. The Examiner concludes that it would have been obvious to use the closed loop RTO process of Martin for the thermal destruct unit of Ryham, or for the scrubber of Gautreaux, Jr.

The rejection is respectfully traversed.

The present invention is directed to a method of removing sulphides and other volatile contaminants from a liquor vapor condensate produced in pulping processes. The process utilizes a closed-loop, so that different gas components (such as SO₂) are partly recycled in the closed loop and thereby enriched (the minor amount of gas released out of the system will have a low impact to the environment despite elevated concentrations). The enrichment improves the performance of the system with regard to the removal of sulphides from the condensate. The sulphide is removed from the condensate, is then oxidized, and thereafter it is partly absorbed before it is returned to the condensate.

Ryham discloses a process for utilizing regenerative heat recovery for high temperature condensate stripping. Steam is used to strip foul condensate in a conventional manner. The condensate is preheated so that the process operates at a relatively high temperature, and the stripped off gases are thermally destroyed. Ryham does not disclose or suggest using air or any other oxygen containing gas to strip foul condensate, nor does Ryham disclose or suggest a closed-loop process.

Gautreaux, Jr. discloses an alkaline scrubber for condensate stripper off-gases. The scrubber

is designed to selectively remove reduced sulfur gases and allow most of the methanol to remain in the scrubbed gases. The gas stream is then incinerated. Gautreaux, Jr. do not disclose or suggest a closed loop process.

Martin et al. discloses a method of removing sulfur from a process gas stream using a packed bed calcinator. Martin et al. is cited for their teaching that an RTO is an alternative to a thermal destruct process. However, Martin et al. discloses the use of a flameless thermal oxidizer or a recuperative type flameless thermal oxidizer. Martin et al. do not disclose or suggest a regenerative thermal oxidizer. Moreover, Martin et al. do not disclose or suggest a closed loop process.

Applicants respectfully submit that the combination of references nowhere discloses or suggests the closed loop process as claimed, or that the sulphide from the condensate can be used to enhance sulphide removal from the same condensate, just by oxidizing it. The sulphide is removed from the condensate and is then oxidized, and thereafter it is partly absorbed in the condensate to lower the pH, which enhances the removal of sulphides. Sulphides, together with the oxidized sulphur (SO₂), enter the regenerative thermal oxidizer, where they are oxidized and thereby enrich the SO₂ concentration in the system. The SO₂ scrubber is used to control this SO₂ concentration. These features are nowhere taught by the cited references.

The Examiner rejects claims 1-11 under 35 U.S.C. 112, first paragraph, as being non-enabling. The Examiner states that the specification does not provide enough information as to how the process is performed, as Figure 1 does not explain where the condensate comes from. The Examiner also questions how apparatus (3) is a condensate scrubber.

The rejection is respectfully traversed.

The specification clearly discloses that the condensate is the liquor-steam condensate from a pulp manufacturing process. See pages 1-3 of the PCT application, and page 3, lines 6-11 in particular. Claim 1 also expressly recites a method of removing sulphides and other volatile contaminants 'from liquor vapor condensate from a pulp manufacturing process'.

With regard to apparatus (3), Applicants respectfully submit that it is not described as a

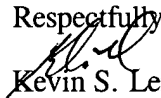
condensate scrubber as the Examiner alleges, but rather as an SO₂ scrubber, with an alkaline solution as the absorption medium. The alkaline absorption medium absorbs the sulphur dioxide in the SO₂ scrubber, and the gas is then returned to the condensate scrubber (1) to be used again as a stripping medium. See the paragraph bridging pages 3-4 of the PCT application.

The Examiner rejects claims 1-11 under 35 U.S.C. 112, second paragraph, as being indefinite. The Examiner states that claim 1 is confusing due to the term "either". By the accompanying amendment, the term has been deleted. Also by the accompanying amendment, the term "preferably" has been deleted.

The accompanying amendment also corrects improper multiple dependencies and modifies language to be consistent with U.S. patent practice.

Reconsideration and allowance are respectfully requested in view of the foregoing.

Respectfully submitted,


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